This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): A method for processing a computer aided polygon model, comprising:

forming (502) a vertex array which is linear and static and comprises the vertices of the image elements of the polygon model;

forming (504) an index array which is linear and the elements of which determine the image elements of the polygon model by pointing at the vertices of the image elements in the vertex array, and which index array comprises an active part, the image elements determined by the elements of the active part being included in the polygon model part to be presented graphically; characterized by

forming (506) additionally a hierarchical data structure whose hierarchy is based on the division of the vertices in the image space, the nodes of which hierarchical data structure point at nodes of a lower level in the hierarchy, the leaf nodes of the hierarchical data structure pointing at elements of the active part of the index array; and

reducing (510) the polygon model part to be presented graphically by means of the hierarchical data structure, maintaining the linearity of the index array.

2. (currently amended): A method according to claim 1, characterized by wherein reducing (510) the polygon model by comprises:

removing (602) at least two hierarchically equal leaf nodes from the hierarchical data structure;

including (604) the location information representing the vertices pointed at by the index array elements pointed at by said at least two leaf nodes in a node of an upper level in the hierarchy, whereby this upper level node becomes a leaf node; and

removing (606) at least one element of the index array pointed at by said at least two hierarchically equal leaf nodes from the active part.

3.   (currently amended): A method according to claim 1, ~~characterized by~~ further comprising:

forming (504) an index array in such a way that the index array also comprises a passive part, the vertices pointed at by the elements of the passive part belonging outside the polygon model part to be presented graphically; and

reducing (510) the polygon model part by moving at least one index array element from the active part to the passive part.

4.   (currently amended): A method according to claim 1, ~~characterized by~~ wherein forming (506) a hierarchical data structure ~~by~~ comprises:

dividing (702) the coordinate space represented by the polygon model into hierarchical sectors on the basis of vertices contained in the vertex array;

including (704) the pointers of the nodes corresponding to the sectors of the next lowest level in the hierarchy in the node corresponding to each hierarchical sector;

including (706) the pointers pointing at the index array elements pointing at the vertices determining the lowest hierarchical sector in the leaf nodes.

5.   (currently amended): A device for processing a computer aided polygon model, ~~characterized in that the device comprises~~ comprising:

a vertex array (402) which is linear and static and comprises the vertices of the image elements of the polygon model;

an index array (404) which is linear and the elements of which determine the image elements of the polygon model by pointing at the vertices of the image elements, and

which index array (404) comprises an active part (412), the image elements determined by the elements of the active part being included in the polygon model part to be presented graphically; and

a hierarchical data structure (406) whose hierarchy is based on the division of the vertices in the image space, the nodes of which hierarchical data structure (406) point at nodes of a lower level in the hierarchy, the leaf nodes of the hierarchical data structure (406) pointing at elements of the active part (412) of the index array (404); and

a processing unit (408) connected to the index array (404), the hierarchical data structure (406) and the vertex array (402) to reduce the polygon model part to be presented graphically by means of the hierarchical data structure (406), maintaining the linearity of the index array (404).

6.   (currently amended): A device according to claim 5, ~~characterized in that~~ wherein the processing unit (408) is arranged to remove at least two hierarchically equal leaf nodes from the hierarchical data structure (406);

wherein the processing unit (408) is arranged to include the location information representing the vertices pointed at by the index array elements pointed at by at least two leaf nodes in a node of an upper level in the hierarchy, whereby this upper level node becomes a leaf node; and

wherein the processing unit (408) is arranged to remove at least one index array element pointed at by said at least two hierarchically equal leaf nodes from the active part.

7.   (currently amended): A device according to claim 5, ~~characterized in that~~ wherein the index array (404) further comprises a passive part (414), the vertices pointed at by the elements of the passive part belonging outside the polygon model part to be presented graphically; and

wherein the processing unit (408) is arranged to reduce the polygon model by moving at least one index array element from the active part (412) to the passive part (414).

8.   (currently amended): A device according to claim 5, ~~characterized in that~~ wherein the hierarchical data structure (406) includes hierarchical sectors based on vertices of the vertex array;

wherein the node corresponding to each hierarchical sector includes the pointers of the nodes corresponding to the sectors of the next lowest level in the hierarchy; and

wherein the leaf nodes of the hierarchical data structure (406) include pointers pointing at the index array elements pointing at the vertices determining the lowest hierarchical sector.

9.   (currently amended): A computer program for processing a polygon model, ~~which computer program is embodied in a distribution medium readable by a computer, characterized in that the computer program comprises~~ comprising:

a vertex array (402) which is linear and static and which includes the vertices of the image elements of the polygon model;

an index array (404) which is linear and the elements of which determine the image elements of the polygon model by pointing at the vertices of the image elements, and which index array (404) comprises an active part (412), the image elements determined by the elements of the active part being included in the polygon model part to be presented graphically;

a hierarchical data structure (406) whose hierarchy is based on the division of the vertices in the image space, the nodes of which hierarchical data structure point at nodes of a lower level in the hierarchy, the leaf nodes of the hierarchical data structure pointing at elements of the active part (412) of the index array; and

computer-executable commands to reduce (508) the polygon model part to be presented graphically by means of the hierarchical data structure, maintaining the linearity of the index array.

10.   A computer program according to claim 9, ~~characterized in that~~ wherein the computer program comprises:

a computer-executable command (602) to remove at least two hierarchically equal leaf nodes from the hierarchical data structure;

a computer-executable command to include (604) the location information representing the vertices pointed at by the index array elements pointed at by said at least two leaf nodes in the node of an upper level in the hierarchy, whereby this upper level node becomes a leaf node; and

a computer-executable command to remove (606) at least one element of the index array pointed at by said at least two hierarchically equal leaf nodes from the active part (412).

11.   (currently amended):   A computer program according to claim 9, ~~characterized in that~~ wherein the index array (404) further comprises a passive part (414), the vertices pointed at by the elements of the passive part belonging outside the polygon model part to be presented graphically; and

wherein the computer program includes a computer-executable command to reduce (508) the polygon model by moving at least one index array element from the active part (412) to the passive part (414).

12.   (currently amended):   A computer program according to claim 9,
~~characterized in that~~ wherein the hierarchical data structure ~~(406)~~ includes hierarchical
sectors based on vertices of the vertex array;

wherein the node corresponding to each hierarchical sector includes the pointers
of the nodes corresponding to the sectors of the next lowest level in the hierarchy; and

wherein the leaf nodes of the hierarchical data structure ~~(406)~~ include pointers
pointing at the index array elements pointing at the vertices determining the lowest hierarchical
sector.

13.   (new):   A distribution medium readable by computer, wherein the
distribution medium embodies the computer program of claim 9.